

duced to the Academy the Bell telephone, the Hughes microphone, and the Edison phonograph. He was very prominently connected with the Electrical Exhibition at Paris in 1881. From 1881 until his death he held the editorship of the journal entitled *La Lumière Électrique*, which was founded by him, and to which he was an unceasing contributor. Whether he was a great scientific genius may be doubted, and whether in some matters he did not assume the attitude of partisan rather than that of historian is also perhaps open to debate; but none can deny that he had by his diligence and talents won himself a very important place in the ranks of science. The rôle of scientific journalist may be said to have almost been created by him, and he was always anxious to maintain the dignity of science and to advance the interests of scientific workers. It would be difficult to fill up the void left by his sudden decease.

### NOTES

M. FAYE read to the Academy of Sciences, on Monday, a report drawn up by the Academical Committee appointed to prepare for the election of the three French delegates to the Meridian Congress of Washington. The Committee, whose conclusions have been adopted by the Academy, declines to take any final step, and will ask the Minister to appoint a certain number of delegates of several public administrations in order to deliberate in common with them and give final advice.

THE Committee appointed by the Academy of Sciences to report on the proposal to sell the Paris Observatory grounds, has held its first meeting. M. Wolff, Member of the Section of Astronomy, read a note, which will be printed, opposing the scheme. He said, *inter alia*, that the Government had constructed an Observatory at Meudon, which was almost complete, and that he was certain that M. Janssen, the present director, would lend his instruments and grounds to any astronomer wishing to execute special work which could not be executed in the interior of Paris. M. Janssen, who was present, said that he should be most happy to comply with any wish expressed by a competent observer, the Observatory not being his private property, but belonging to the Government.

THE Meteorological Observatory of Sents, in the Canton of Appenzell, Switzerland, at a height of 8094 feet was established in August 1882, and the regular observations began with September 1 of that year. This observatory, which, from its position and height, is *par excellence* the high-level meteorological station of Switzerland, is maintained at an annual cost of 6000 francs, raised jointly by the four neighbouring cantons, the learned societies, and the Alpine Club of Switzerland, and is further subsidised by 1000 francs from the national grant for meteorology. A brief *résumé* of the results of the first year has been received. The eye-observations are made five times daily; the results at these hours, however, are only given in full as regards the force of the wind. These are of some interest, as showing that, so far as regards the observing-hours, viz. 7 and 10 a.m. and 1, 4, and 9 p.m., the mean diurnal force of the wind, for each of the twelve months beginning with August 1882, is least at 1 p.m. We look forward with no small interest to a fuller report than the one now before us of the diurnal results for each month of the barometric, thermometric, hygrometric, and rain observations from this invaluable addition recently made to the high-level stations of Europe.

A CURIOUS tidal phenomenon took place on the morning of the 21st inst. on the west coast of England. The following communication (dated Feb. 21) to the Secretary, Meteorological Office, from Ellis Roberts, Trinity Buoy Keeper, Aberdovey, contains the leading circumstances connected with the occurrence:—"Afternoon

of the 20th (civil time), it blew strong (6 to 7) from south-south-west and south-west, increasing towards midnight to very heavy gale (force in the squalls, 10 to 11) with heavy rain. I retired at 11. Barometer at 29.31, falling. I cannot say when it moderated, but at 6 a.m. the sky was beautifully clear, with moderate breeze about west (force 3 to 4). The time of high water for this bar, by the Liverpool almanacs, this morning tide would be 2h. 33m., but from some observations that I have made for eighteen months that I have been living here, the time of high water in the river off the village would be about 3h. 5m. to 3h. 10m. I wish to make this remark on account of the times the phenomenon took place. About 6.30, or near half ebb, I noticed the barometer had risen to 29.34 or .35, with beautiful, fine, clear sky; moderate breeze (about 3) from west-south-west, but the stream nearly slack when it ought to have been running *ebb* about two knots; very heavy sea on the bar. At 6.50 the vessels were fairly swung to the flood, which was running about 1 to 1½ knot, and the water was fast rising. At 8.15 water again nearly slack, with light breeze (about 2) from south to south-south-east; very fine, but clouds beginning to form in the south-west and west. At 8.30 the water was falling; at 9, water falling very fast, *ebb* running 2½ to 3 knots; at 10.45, water beginning to rise for the natural tide. As there is no gauge for the rise and fall at this place, I cannot give the *correct* rising and falling, but I will give them according to the best of my judgment. The afternoon tide of the 20th was noticed to be very low, much lower than could be expected from the state of the wind and weather. But this morning's tide rose fully *six* feet above the ordinary level, or nearly to the height of the tides at full and change, with the moon's parallax 59' to 60' (this tide had fallen as usual, or rather more rapidly, up to nearly half ebb). I cannot exactly say how much the water had risen before I noticed it, but the unnatural tide rose after I noticed it over 2 feet 6 inches; and from 8.30 to 10.15 the same had fallen over 6 feet, although the wind had shifted to the westward, with passing showers and hard squalls. Barometer all the time very steady at 29.34 or .35. Now, 4 p.m., it is slack water, ships lying head to wind, but a lower tide than any that I recollect in this river with the wind as strong from the westward. I have heard it reported that there was heavy thunder and lightning in the neighbourhood, but I neither saw nor heard any." Similar occurrences are reported from the Dee, near Chester, and from the Mersey.

THE Second Teyler Society of Haarlem offers a gold medal of the value of 400 florins for a critical study of all that has been said for and against spontaneous generation, especially during the last twenty-five years. The competition is international, and further details may be obtained by applying to "La Maison de la Fondation du feu M. P. Teyler van der Hulst, Haarlem."

WE are asked to state that a society calling itself the "Society of Arts, Letters, and Science," has no connection whatever with the Society of Arts.

THE old Sorbonne and Collège Louis-le-Grand in Paris will soon be demolished, to be reconstructed on a larger and more magnificent scale. The same measure is to be applied to the Collège de France. All this part of the Latin Quarter will be quite remodeled, and will in a few years be unrecognisable.

THE Municipal Council of Paris has passed a resolution to exhibit, in each of the twenty town halls of that city, the meteorological notices issued every day by the French Office.

PROFESSOR MILNE of Japan has just made a new move in the direction of investigating seismic phenomena. He has made preparations for the establishment at Takashima, near Nagasaki, of an underground or catachthonic observatory. The workings in the coal-mine at that place not only extend beneath the island

of Takashima itself, but also beneath the sea, and have a total length of about seventy miles. About 2500 people are employed there, and the output of coal is about 1200 tons a day. Owing to chemical decomposition going on in the workings, which are on the "post and stall" system, the temperature is so high that spontaneous combustion is constantly occurring. Prof. Milne visited places having a temperature of  $110^{\circ}$  F. This, together with the escape of fire-damp, make the mine very dangerous. The experiments which have been commenced, and which are to be continued systematically, are: (1) the observation of earth-currents, which so far appear to be but feeble; (2) listening in a telephone to the sound produced by the movement of a microphone placed in the solid rock; (3) the observation by means of a tromometer, or tremor measure, of earth-tremors; (4) the observation of two delicate levels to see if the seasonal movements of the soil on the surface exist also underground; (5) attempts to measure the influence of the tide, which rises there about eight feet every twelve hours, in producing a bend, or crushing in the roof of the mine. Observations on atmospheric electricity may subsequently be added. All these will be carried on in conjunction with tidal, barometrical, and thermometrical observations, as well as with those on the escape of fire-damp and the entrance of water to the mine. One practical object of these series of observations is to ascertain whether any of these phenomena are connected with each other, and especially with the escape of fire-damp in the mine. At present it appears that the gas shows itself about eight hours before a fall in the barometer, and therefore the indications of the latter are useless as danger warnings. On the surface of the earth tremors increase with a barometrical fall, and perhaps before it. Earth-tremors and the escape of fire-damp may, therefore, Prof. Milne thinks, be connected; but, whether practical results be obtained or not, the experiments will enable a comparison to be made between surface phenomena and those which are subterranean. The native company which now owns the mine, as well as the resident engineer there, have afforded every assistance to Prof. Milne in his investigations, and that gentleman, we are informed, will be glad to receive suggestions for improved or additional observations, from any scientific men in this country interested in the subject. Any communications intended for him should be addressed to the Imperial College of Engineering, Tokio.

THE Russian *Izvestia* publishes the results of the researches of M. Brounoff into the variations of temperature in consequence of the cyclones in Europe. He has taken seventy-six cases in which the meteorological bulletins showed the presence of a cyclone in Europe, and prepared a meteorological map for each of these days, showing the deviation of temperature from the normal, and the route of the cyclone. The average deviations of temperature in the regions of the cyclones appear as follows for different months: January,  $3.7^{\circ}$  Cels.; February,  $2.2^{\circ}$ ; March,  $1.2^{\circ}$ ; April,  $0.2^{\circ}$ ; May,  $0.0^{\circ}$ ; June,  $-0.7^{\circ}$ ; July,  $-0.2^{\circ}$ ; August,  $-0.4^{\circ}$ ; September,  $-0.1^{\circ}$ ; October,  $0.2^{\circ}$ ; November,  $0.9^{\circ}$ ; December,  $1.4^{\circ}$ . It results from these figures that, as might have been foreseen, during the winter the cyclones bring warmer air, and colder air during the summer. If the region of the cyclone be divided into four parts by two perpendicular lines traced through its centre, the two right parts widely differ from the two left, the deviations being for the former: winter,  $4.6^{\circ}$ ; spring,  $1.9^{\circ}$ ; summer,  $0.7^{\circ}$ ; and autumn,  $1.7^{\circ}$ , all positive; while for the two left parts the deviations are all negative as well during the summer as during the winter, namely:  $-0.9^{\circ}$  for the winter,  $-1.1^{\circ}$  for the spring,  $-1.7^{\circ}$  for the summer, and  $-0.9^{\circ}$  for the autumn.

It appears from a notice published in the last issue of the *Izvestia* that stone-age implements were used by Russians in Siberia at a time very near to our own. Thus, owing to the

difficulty of having iron implements, and even iron, the Cossacks who occupied the valley of the Irkut at Tunka availed themselves of the numberless stone implements they found scattered on the hills around Tunka, where large manufactures of stone implements have been discovered. There are still people who remember also that their grandfathers were compelled to follow the advice of the Mongols, and to make use of nephrite hatchets; the tradition says also that there were Cossacks who understood themselves the art of making jade implements. Any one who knows the difficulties of obtaining iron in Siberia some thirty years ago, and even now, will not doubt the trustworthiness of the tradition. We may add also that the late Prof. Schapoff has found the settlers at Turukhansk largely using stone pestles and hammers, some of which were exhibited at the Irkutsk Museum, before it was destroyed by fire.

In the last number of *Naturen* Herr Geelmuyden of Christiania describes the so-called "Jættegryder" giant-bowls of Orholm, on the east side of Christiania fjord. These curious geological formations, of which good drawings are given, are not only the largest of their kind in Scandinavia, but are of greater size than those of the well-known glacier garden of Lucerne, which have hitherto been considered as the most extensive of such natural depressions. In two of the upper cavities at Orholm, all of which lie on the edge of a steep fjeld, a few pine and birch trees have taken root and grown in a tolerably normal manner till they reached the level of the surrounding rock, when the branches have invariably been bent and distorted by the force of the winds, and their growth has been arrested. The depth of the depressions has not been determined, but the perpendicular inclination of the inner walls would lead to the inference that it is considerable.

MESSRS. CROSSLEY BROTHERS, of Manchester, have recently added an important improvement to their "Otto" gas-engine. This consists of a self-starting apparatus by means of which the engine can be put in motion by simply opening a valve. The apparatus consists of a small receiver into which the engine exhausts for a very short portion of its strokes the burnt gases which result from the ignition of the charge in the cylinder. These gases fill the receiver, and in the course of half a minute raise a pressure in it nearly corresponding to the pressure in the cylinder during the moment of ignition. These stored burnt gases are admitted again to the cylinder at the moment of starting by a very simple piece of mechanism, and thus put the engine in motion in much the same way as steam moves a steam-engine, thus saving the trouble of pulling the wheel round to get in the first charges.

ON January 22, at 8.47 p.m., a meteor was observed in the province of Kalmar, Sweden. It appeared in the north as a fire-ball, without trail, gradually descending to the earth, so slowly that some observers, in order that it should not become hidden from view by intervening houses, ran about 300 m., and still beheld the object. The speed decreased by degrees, and finally the ball seemed to remain stationary and then went out. No whizzing noise or report was heard. The object was observed for a minute and a half. Its path was not regular but marked by great deviations. When first seen its size and lustre was like that of Jupiter, and its point of issue  $50^{\circ}$  above the horizon, while when disappearing it was  $10^{\circ}$  above the horizon. It seemed to increase in size as it descended. Its slow speed was particularly remarkable, as it differed so greatly from that of ordinary meteors.

THE Anthropological Society of Paris is constituted as follows for 1884:—President: Dr. Hamy; Vice-Presidents: Drs. Dureau and Letourneau; Secretary: Dr. P. Topinard; Assistant Secretaries: M. Girard de Rialle, Dr. Prat, and M. Issaurat; Committee of Publication: Drs. de Quatrefages, Matthias Duval, and Thulié.

THE death is announced of Dr. Gotthilf Heinr. Ludw. Hagen, with whose name for the last sixty years progress in the domain of hydrotechnics in Germany is closely associated. He died at Berlin on the 3rd inst., having nearly completed his eighty-seventh year.

THE death is announced of Dr. A. Bernstein, the well-known author of the "Naturwissenschaftliche Volksbücher." He was born at Danzig in 1812, and died at Berlin on the 12th inst.

ON February 18 an earthquake was felt in several parts of the Department of Algiers. Its duration was very short. The *Turkestan Gazette* states that as many as ninety distinct shocks of earthquake have been felt at Oosh since November 14. Other shocks have also recently occurred at Viernoe and Tashkend. A violent earthquake is also reported from the Birvari district (province of Bitlis, on Lake Van, in Asiatic Turkey) on February 10. Great damage was done, as many houses fell.

MR. W. WHITAKER desires us to point out in reference to the article on the "Geological Survey of the United Kingdom," printed in the last number of NATURE (p. 395), that some of the bulkiest publications of the Survey have appeared since 1855. He favours us with a list of these, in which we are glad to observe his own "London Basin, pp. xii. 620."

IN consequence of a generally expressed wish from many hundreds of intending participators at the forthcoming Ornithological Congress at Vienna, the Committee of the Congress has altered the date for the first meeting from April 16 to April 7. As the Ornithological Exhibition will be held from April 4 to April 14, the ornithologists present in Vienna at that time will have an opportunity of seeing the Exhibition, while at the same time attending the Congress. Numerous Belgian, Danish, French, German, Austrian, Italian, and Russian men of science will meet in Vienna upon that occasion.

THE German Government has issued an edict concerning the preservation of prehistoric burial-mounds which may be discovered henceforth upon German soil.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♂) from India, presented by Mr. W. Graeme; a Sambar Deer (*Cervus aristotelis* ♂) from Ceylon, a European Flamingo (*Phanicopterus antiquorum*) from Southern Europe, presented by Mr. James McGregor; a Vulpine Phalanger (*Phalangista vulpina* ♂) from Australia, presented by Mr. A. H. Lowder; a Pine Marten (*Mustela martes*), British, presented by Mr. Edward de Stafford; a Common Hare (*Lepus europæus*), British, presented by Mr. G. Pottier; a Rhesus Monkey (*Macacus rhesus*) from India, presented by Master A. J. Neill; two Laughing Kingfishers (*Dacelo gigantea*) from Australia, presented by Dr. Evans; a Black-footed Penguin (*Spheniscus demersus*) from South Africa, presented by Mr. F. Bloor; a Greek Tortoise (*Testudo græca*), European, presented by Miss M. L. Fergusson; a Stump-tailed Lizard (*Trachydosaurus rugosus*) from New Holland, a Bearded Lizard (*Amphibolurus barbatus*) from Australia, presented by Mr. J. W. Bostock; a Pike (*Esox lucius*) from British fresh waters, presented by Mr. Charles D. Hoblyn, F.Z.S.; a Lesser White-nosed Monkey (*Cercopithecus petaurista* ♀), a Campbell's Monkey (*Cercopithecus campbelli* ♀) from West Africa, a Ruddy Ichneumon (*Herpestes smithi*) from India, a Bactrian Camel (*Camelus bactrinus* ♂) from Central Asia, three White-crowned Pigeons (*Columba leucocephalus*) from the West Indies, purchased.

#### OUR ASTRONOMICAL COLUMN

THE SOLAR ECLIPSE OF 1806, DECEMBER 10.—When Rümker was on the point of leaving England to undertake the direction of the observatory erected by Sir Thomas Brisbane at Paramatta, N. S. W., he came into possession of a letter addressed to Maskelyne by Admiral Bligh, Governor of the colony, con-

taining observations of a solar eclipse on December 10, 1806, which was described as almost total; the observations were made at Government House, Sydney Cove, with a three-foot achromatic and two chronometers by Arnold; Rümker communicated the Admiral's letter to Zach, who published it in vol. v. of his "Correspondance Astronomique," with the places of the sun and moon from Delambre and Burckhardt, and the longitude of Sydney Cove, which he had deduced from Bligh's observations. Employing Burckhardt's Lunar Tables and the last Solar Tables of Carlini the elements of this eclipse will be found to be approximately as follows:—

G.M.T. of conjunction in R.A. 1806, Dec. 9 at 14h. 19m. 14s.

R.A. ... ..	256 19 1
Moon's hourly motion in R.A. ...	35 3
Sun's " " " " " " " "	2 45
Moon's declination ... ..	23 1 8 S.
Sun's " " " " " " " "	22 52 2 S.
Moon's hourly motion in decl. ...	0 5 S.
Sun's " " " " " " " "	0 14 S.
Moon's horizontal parallax ... ..	56 16
Sun's " " " " " " " "	0 9
Moon's semi-diameter ... ..	15 20
Sun's " " " " " " " "	16 15

The eclipse was therefore an annular one: it was central and annular with the sun on the meridian in longitude  $143^{\circ} 23'$  E. and latitude  $32^{\circ} 23'$  S. Admiral Bligh's position was not within the annular phase, but on making a direct calculation for it, we find the greatest eclipse at oh. 41m. p.m. local mean time, magnitude 0.92. Perhaps this is the first eclipse that was astronomically observed at Sydney, and it may be noted in connection with Mr. Russell's historical account of the progress of astronomy at that place, of which we gave some account last week.

THE LATE PROF. KLINKERFUES.—Ernst Friedrich Wilhelm Klinkerfues was born at Hofgeismar in Hesse, on March 29, 1827. He was attached to the Observatory of Göttingen as assistant in 1851, under Gauss; he became provisional director of that establishment in 1859, and in 1868 was confirmed in that appointment. Since 1863 he was one of the professors in the Philosophical Faculty at Göttingen. He was an able practical and theoretical astronomer, and discovered the comets 1853 III., 1854 I., 1854 III., 1854 IV., 1855 II., and 1857 V.; the first of these, which bore his name very generally while under observation, was telescopically observed in full sunshine, and only a few degrees from the sun's place by Mr. Hartnup at Liverpool, and by Schmidt at Athens. In 1860 Klinkerfues proceeded to Cullera in Spain for the observation of the total solar eclipse in July. His work in theoretical astronomy included a method of determining the orbits of the binary stars, and he was the author of a valuable theoretical treatise on the science. When, on the occurrence of the great meteor shower of November 27, 1872, it was found that the meteors followed the track of Biela's comet, and the comet itself was supposed to be close to the earth on that day, Klinkerfues thought it might be found opposite the radiant of the meteors in Andromeda, and accordingly telegraphed to Mr. Pogson at Madras to this effect, "Biela touched earth November 27, search near  $\theta$  Centauri." It will be remembered that, in consequence of this telegram from Klinkerfues, Mr. Pogson actually detected a comet in the vicinity, but was only able to obtain its place on two mornings; so that the orbit could not be determined. There was a divided opinion at the time as to its connection with Biela, and perhaps this may now be said to be more than doubtful, notwithstanding the singular circumstances attending its discovery. Klinkerfues died suddenly at the Observatory of Göttingen on January 28.

#### GEOGRAPHICAL NOTES

MR. H. H. JOHNSTON leaves London to-morrow for Zanzibar, to conduct an expedition to Mount Kilimanjaro. The expenses of the expedition are borne by the Royal Society and the British Association, the object being to form as large a collection as possible of the flora and fauna of the highest mountain in Africa.

ANOTHER attempt will be made this year to rescue the United States observing party in Lady Franklin Bay, under Lieut. Greeley. This party, twenty-five in all, went out in August 1881